

Claims

What is claimed is:

1. A storage system comprising:
 a front-end control element for controlling information exchange with one or more attached host computer systems;
 a back-end control element for controlling information exchange with I/O
 5 devices; and
 an interconnect element coupled to said front-end control element and coupled to said back-end control element to enable exchange of information therebetween,

2. The system of claim 1 further comprising:
 a plurality of disk drives coupled as I/O devices to said back-end control element.

3. The system of claim 2
 wherein said plurality of disk drives comprises:
 a first subset of said plurality of disk drives; and
 a second subset of said plurality of disk drives, and
 5 wherein said back-end control element comprises a plurality of back-end controllers including:
 a first pair of back-end controllers coupled to said first subset; and
 a second pair of back-end controllers coupled to said second subset.

4. The system of claim 3 further comprising:
 a first pair of redundant links coupling said first pair of back-end controllers to said first subset; and
 a second pair of redundant links coupling said second pair of back-end
 5 controllers to said second subset.

5. The system of claim 1 wherein said interconnect element comprises a pair of interconnect elements and wherein said front-end control element comprises a plurality of front-end controllers and wherein each of said plurality of front-end controllers is coupled to each of said pair of interconnect elements.

6. The system of claim 5 further comprising:
a first set of disk drives; and
a second set of disk drives, and
wherein said back-end control element comprises a plurality of back-end controllers including:

a first pair of back-end controllers coupled to said first set wherein each of said first pair of back-end controllers is coupled to a corresponding one of said pair of interconnect elements; and

a second pair of back-end controllers coupled to said second set wherein each of said second pair of back-end controllers is coupled to a corresponding one of said pair of interconnect elements.

7. The system of claim 1 wherein said interconnect element comprises a PCI bus.

8. The system of claim 1 wherein said interconnect element comprises:
a Fibre Channel communication medium; and
a Fibre Channel SAN switch coupled to said Fibre Channel communication medium.

9. The system of claim 1 wherein said interconnect element comprises an InfiniBand compliant communication medium.

10. The system of claim 1 wherein said interconnect element comprises a local area network communication medium.

11. The system of claim 1 wherein front-end control elements, back-end control elements and interconnect elements may be added independent of all other such elements.

Sub C1
12. The system of claim 1 wherein said front-end control element is operable to perform mapping of logical storage addresses to physical storage addresses for further operations by said back-end control element.

13. The system of claim 1 wherein said back-end control further comprises:
a RAID parity assist element for RAID parity generation and checking.

Sub A1
14. A front-end control element for a storage subsystem comprising:
a host system interface;
a processor coupled to said host system interface to process host system generated I/O requests received through said host system interface; and
5. a SAN interface coupled to said processor for coupling said front-end control element to a back-end control element.

Sub C1
15. The front-end control element of claim 14 wherein said SAN interface comprises a PCI bus interface.

16. The front-end control element of claim 14 wherein said SAN interface comprises a Fibre Channel communication media interface.

17. The front-end control element of claim 14 wherein said SAN interface comprises an InfiniBand compliant communication medium.

18. The front-end control element 14 wherein said SAN interface comprises a local area network communication medium.

Sub A1
19. A back-end control element for a storage subsystem comprising:

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20. The back-end control element of claim 19 wherein said SAN interface comprises a PCI bus interface.

21. The back-end control element of claim 19 wherein said SAN interface comprises a Fibre Channel communication media interface.

22. The back-end control element of claim 19 wherein said SAN interface comprises an InfiniBand compliant communication medium.

23. The back-end control element of claim 19 wherein said SAN interface comprises a local area network communication medium.

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